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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/800,703	03/07/2001	Dustin P. Wood	884.159US2	4036

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EXAMINER
GRAYBILL, DAVID E

ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/800,703	WOOD, DUSTIN P.	
	Examiner	Art Unit	
	David E Graybill	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30,35-37 and 39-47* is/are pending in the application.

4a) Of the above claim(s) *36* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30,35,37 and 39-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

The amendment to the claims filed 1-29-3 is non-responsive to the last Office action because it fails to conform to the provisions of MPEP 714.03:

> 714.03 Amendments Not Fully Responsive - Action To Be Taken: Where a bona fide response to an examiner's action is filed before the expiration of a permissible period, but through an apparent oversight or inadvertence some point necessary to a complete response has been omitted - such as an amendment or argument as to one or two of several claims involved or signature to the amendment - the examiner, as soon as he or she notes the omission, should require the applicant to complete his or her response within a specified time limit (usually one month) if the period for response has already expired or insufficient time is left to take action before the expiration of the period. If this is done the application should not be held abandoned even though the prescribed period has expired.

Specifically, the drawing objection under 37 CFR 1.83(a) has not been addressed.

Because the response appears to be bona fide, but through an apparent oversight or inadvertence the response is incomplete, and in order to continue to afford applicant the benefit of compact prosecution, the requirement to complete the response within a one month time limit is waived, the amendment is entered, and the claims are examined on the merits.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, process limitations of claims 35, 37, 44 and 47, specifically, "the at least one signal trace includes at least one segment rotated," "at least one signal trace with segments rotated," and "at least one trace segment rotated,"

must be shown or the features canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 35, 40, 44 and 47 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. The undescribed subject matter is the process limitations, "the at least one signal trace includes at least one segment rotated," "at least one signal trace with segments rotated," and "at least one trace segment rotated." To further clarify, the original disclosure provides support only for other than the trace being rotated. To further clarify, to rotate is to turn about an axis or a center, but there is no

original disclosure of a process wherein the trace is rotated about an axis or center.

In the rejections infra, reference labels are generally recited only for the first recitation of identical claim language.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 30 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Duxbury (5360949).

At column 2, line 61 to column 5, line 65, Duxbury teaches the independent claim 30 limitations of an integrated circuit package comprising: a first conductive layer 36 having a first grid of holes inherently disposed relative to a first coordinate system; a second conductive layer 38 parallel to the first conductive layer, the second conductive layer having a second

grid of holes offset from the first grid of holes and inherently disposed relative to the first coordinate system; a dielectric layer 12 between the first and second conductive layers; and at least one conductive signal trace disposed within the dielectric layer, the at least one conductive signal trace disposed parallel to an axis of a second coordinate system that is rotated with respect to the first coordinate system by an angle of 22.5 degrees.

To further clarify the teaching of the first conductive layer and the second conductive layer disposed relative to a first coordinate system and the trace disposed parallel to an axis of a second coordinate system that is rotated 22.5 degrees with respect to the first coordinate system, it is noted that a second coordinate system can be chosen to have an axis parallel to the axis of the trace, and a first coordinate system can be chosen rotated 22.5 degrees with respect to the second coordinate system, and it is inherent that the first and second conductive layer are disposed relative to the first and second coordinate system.

Although Duxbury does not appear to explicitly teach the preambular limitation, "an integrated circuit package," the preamble is accorded little patentable weight because it merely recites the intended use of the product, the body of the claim

does not depend on the preamble for completeness, and the structural limitations are able to stand alone. Kropa v. Robie, 187 F.2d at 152, 88 USPQ at 481. Moreover, the intended use does not structurally limit the claims, and the product can be used for the intended use.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duxbury as applied to claim 30, and further in combination with Tanahashi (6184477).

Duxbury does not appear to explicitly teach wherein the first grid of holes includes holes spaced with non-equal pitch in an x direction and in a y direction relative to the first coordinate system.

Nonetheless, at column 8, line 66 to column 9, line 6, Tanahashi teaches that a first grid of holes includes holes spaced with non-equal pitch in an x direction and in a y direction. In addition, it would have been obvious to combine

the product of Tanahashi with the product of Duxbury because it would advantageously provide the first conductive layer of Duxbury. Furthermore, it is inherent in the combination of Tanahashi and Duxbury that the y direction is relative to the first coordinate system.

Claims 39-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Zu (6303871)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

At column 1, line 19 to column 4, line 47, Zu teaches the independent claim 39 limitations of an integrated circuit package comprising: a "core" [not labeled] having first and second sides; and built-up layers 300 on the first side of the core, the built-up layers including first 302 and second 304 conductive layers with non-aligned grids of degassing holes 308, 310.

As cited, Zu also teaches a signal layer [not labeled] between the first and second conductive layers, the signal layer including at least one signal trace with segments rotated relative to the grids of degassing holes; built-up layers on the second side of the core, the built-up layers on the second side of the core including third 302 and fourth 304 conductive layers with non-aligned grids of degassing holes 308, 310, wherein: the first conductive layer includes a first grid of degassing holes 308 arranged in an x direction and a y direction; and the second conductive layer includes a grid of degassing holes 310 offset from the first grid of degassing holes in at least one of the x direction and the y direction, the first conductive layer includes a first grid of degassing holes arranged in an x direction and a y direction; and the second conductive layer includes a grid of degassing holes offset from the first grid of degassing holes in both the x direction and the y direction.

Claims 44-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zu (6303871).

Zu is applied for the same reasons it was applied to claim 43.

In addition, as cited, Zu teaches wherein the third conductive layer includes a first grid of degassing holes arranged in an x direction and a y direction; and the fourth

conductive layer includes a grid of degassing holes offset from the first grid of degassing holes in both the x direction and the y direction.

However, Zu does not appear to explicitly teach the signal layer including at least one trace segment rotated substantially 22.5 degrees relative to the x direction.

Nonetheless, Zu teaches that rotation angle is a result-effective variable for the purpose of orienting the trace route to reduce the variation in the amount of metal above and below the trace to reduce impedance mismatch. Moreover, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed rotation angle limitation because applicant has not disclosed that the limitation is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical, and it appears prima facie that the product would possess utility using another rotation angle. Indeed, it has been held that optimization of range limitations and dimensions are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See MPEP 2144.05(II): "Generally, differences in concentration or temperature will not

support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'" In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). See also In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969), Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989), In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990), In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); and In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

As set forth in MPEP 2144.05(III), "Applicant can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. 'The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to

the prior art range.' In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 716.02 - § 716.02(g) for a discussion of criticality and unexpected results."

Applicant's amendment and remarks filed 1-29-3 have been fully considered and are adequately addressed by the rejections supra.

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to Group 2800 Customer Service whose telephone number is 703-306-3329.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/308-7722.

David E. Graybill
Primary Examiner
Art Unit 2827

D.G.
10-Jul-03